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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,577	04/23/2001	Oliver Heid	P01,0139	3801

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SCHIFF HARDIN & WAITE
6600 SEARS TOWER
233 S WACKER DR
CHICAGO, IL 60606-6473

EXAMINER	
FEICK, EMILY	
ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 07/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N . 09/840,577	Applicant(s) HEID, OLIVER	
	Examiner Emily J. Feick	Art Unit 2862	

-- The MAILING DATE of this communication appears on the cover sheet with th correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-13 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: The specification refers to reference character "7" in reference to Figure 2 but it is not shown in the figure. Correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-10, and 13 are rejected under 35 U.S.C. 102(e) as being unpatentable by U.S. Patent No. 6,111,412 to Boemmel et al..

In reference to claim 1, Boemmel discloses an electrical coil suitable for use as a gradient coil for a magnetic resonance apparatus comprising: at least one electrical conductor (col. 1, lines 17-29); a carrier structure (col. 2, lines 5-6); a cooling device component (col. 2, lines 2-6); and a heat insulator disposed between at least one section of said conductor and carrier structure (col.

2, lines 50-52). Boemmel teaches that the cooling conduit consists of a plastic pipe in which the plastic acts as a heat insulator.

As to claim 2, Boemmel teaches an electrical coil as claimed in claim 1 wherein at least one section of said conductor is a hollow cylinder adapted for guiding a flowing cooling medium therein (col. 2, lines 50-52; col. 4, lines 60-62).

As to claim 3, Boemmel discloses an electrical coil as claimed in claim 1, wherein said cooling device component cools at least one section of said conductor (Figure 4).

In reference to claim 4, Boemmel discloses an electrical coil as claimed in claim 3 wherein said cooling device proceeds in an edge region of a spatial extent of said coil (Figure 1).

In reference to claim 5, Boemmel teaches an electrical coil as claimed in claim 3 wherein said coil has a spatial extent forming a hollow cylinder (col. 4, lines 60-62), and wherein said at least one section of said conductor cooled by said cooling component proceeds in a region of a front side of said hollow cylinder (Figure 1).

As to claim 6, Boemmel teaches an electrical coil as claimed in claim 1 wherein said heat insulator surrounds said conductor (Figure 1; Figure 4; col. 1, lines 15-16).

In reference to claim 7, Boemmel discloses an electrical coil as claimed in claim 1 wherein said heat insulator has a lower thermal conductivity than said carrier structure. Boemmel teaches that the insulator may be composed of plastic (col. 4, lines 16-17) and that the carrier structure may be composed of a non-magnetic material such as epoxy resin (col. 3, lines 36-39). The examiner is assuming that the thermal conductivity values of these materials given by the applicant are conventional (pg 4-5). Therefore, since the applicant has disclosed that the thermal

conductivity of the resin is 0.15 W/(Km) and 0.05 W/(Km) for plastic, the thermal conductivity of the heat insulator is lower than the carrier structure.

As to claim 8, Boemmel teaches an electrical coil as claimed in claim 7 wherein said thermal conductivity of said heat insulator is lower by a factor between 1 and 3 than the thermal conductivity of the carrier structure. Boemmel teaches that the insulator may be composed of plastic (col. 4, lines 16-17) and that the carrier structure may be composed of a non-magnetic material such as epoxy resin (col. 3, lines 36-39). The examiner is assuming that the thermal conductivity values of these materials given by the applicant are conventional (pg 4-5). Therefore, since the applicant has disclosed that the thermal conductivity of the resin is 0.15 W/(Km) and 0.05 W/(Km) for plastic, the thermal conductivity of the heat insulator is lower than the carrier structure by a factor between 1 to 3.

As to claim 9, teaches an electrical coil as in claim 1, wherein said carrier structure comprises a resin casting (col. 5, line 8; col. 5, lines 33-35).

In reference to claim 10, Boemmel teaches an electrical coil as claimed in claim 1, wherein said carrier structure includes element for reducing a non-homogeneity of a magnetic field in which said carrier structure and said conductor are disposed (col. 2, lines 15-16; col. 3, lines 24-27).

In reference to claim 13, discloses an electrical coil as claimed in claim 1 wherein said heat insulator is composed of material selected from the group consisting of glass, ceramic, mineral materials, and polymer materials (col. 2, lines 50-52).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,111,412 to Boemmel et al.

As to claim 11, Boemmel teaches an electrical coil as claimed in claim 1, and that the heat insulator should be avoid problems with eddy currents and should also be ductile (col. 2, lines 52-57). Boemmel does not teach that the heat insulator comprises of a fibrous material specifically. Fibrous material such as fiberglass are insulators which are ductile and would not create eddy currents since it is nonmagnetic. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention from the teaching of Boemmel that it would have been possible to use fibrous materials as the heat insulator since they are insulators, ductile, and will not cause eddy currents.

As to claim 12, Boemmel teaches an electrical coil as claimed in claim1, but does not teach that said heat insulator comprises of a high resistance foam material specifically. Boemmel teaches that the heat insulator should be non-magnetic to avoid problems with eddy currents and should also be ductile in addition to being an insulator (col. 2, lines 52-57). A high resistance foam material meets the properties required as described by Boemmel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention from the

teaching of Boemmel that a high resistance foam material may be used as the heat insulator since it is an insulator, ductile, and will not cause problems with eddy currents.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 6,236,207 to Arz et al. discloses a cooling system for a gradient coil used in NMR applications.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily J. Feick whose telephone number is (703)-305-4450. The examiner can normally be reached on Monday-Friday, 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703)-305-4816. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-305-4816 for regular communications and (703)-308-0956 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-1782.

Emily J. Feick

EJF
June 28, 2002

EDWARD LEFKOWITZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800